

Ph.D. defense presentation

博士論文発表会 (公聴会)

**Optimization of cryomedia containing ovalbumin or sericin
for chicken primordial germ cell preservation**

**ニワトリ始原生殖細胞の保存に向けた、
オボアルブミンあるいはセリシンを含む凍結保存液の最適化**

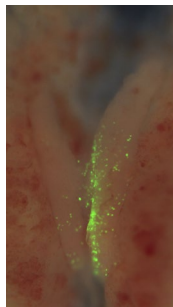
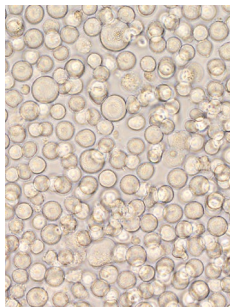
Date: 24 July (Fri) 2026, 9:00~10:00

Presenter: ASMA KHATUN (Program of Bioresource Science)

Venue: C203 (School of Applied Biological Science)

Abstract

The preservation of chicken genetic resources is of paramount importance, both as a backup for commercial breeds that support egg and meat production worldwide and to conserve the genetic diversity of indigenous breeds, which is essential for future breeding. However, because chicken embryos are attached to a large yolk, it is technically impossible to cryopreserve them. In chickens, a unique developmental engineering approach based on the manipulation of primordial germ cells (PGCs), the embryonic precursor cells of gametes, has been developed. Therefore, cryobanking of PGCs is a useful strategy for efficiently maintaining chicken genetic resources without breeding live birds. Here, I investigated the cryoprotective effects of ovalbumin and sericin, as alternatives to serum, on chicken PGCs. Subsequently, two cryomedia were designed: PO comprising 7.5% propylene glycol (PG) and 5% ovalbumin and PS comprising 7.5% PG and 2% sericin. Following the culture of PGCs cryopreserved in these cryomedia, viability and cell doubling times recovered to levels comparable to those of the control group at 6 and 2 days post-culture, respectively. In addition, when frozen-thawed PGCs were transplanted, their gonadal migration ability was significantly lower immediately after thawing; however, it recovered to levels comparable to those of the control group after 4 days of culture. I successfully revived viable offspring from Hinai-dori, designated as a natural monument of Japan, from PGCs cryopreserved in these cryomedia. In conclusion, we developed two chemically defined cryomedia that achieved > 60% recovery of viable PGCs after thawing while maintaining germline competency.



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この公聴会は統合生命科学研究科共同セミナーの対象です。